Fauquier County

Municipal Separate Storm Sewer System (MS4)

Program Plan

For

General Permit No. VAR040123

Last Updated October 2020

Contents

Introduction

This plan and the related annual report are produced in accordance with the Virginia Department of Environmental Quality Permit number VAR040123 which has been issued to Fauquier County for its Municipal Separate Storm Sewer System (MS4). According to the permit, the County shall develop, implement, and enforce a MS4 program designed to reduce the discharge of pollutants from the small MS4 to the maximum extent practicable (MEP) in accordance with this permit, to protect water quality, and to satisfy the appropriate water quality requirements of the State Water Control Law and its attendant regulations. The County shall utilize the legal authority provided by the laws and regulations of the Commonwealth of Virginia to control discharges to and from the MS4. This legal authority may be a combination of statute, ordinance, permit, policy, specific contract language, order or interjurisdictional agreements. The MS4 program shall include the minimum control measures (MCM) described in Part I E of the permit. For the purposes of this permit term, implementation of MCMs in Part I E and the Chesapeake Bay and local TMDL requirements in Part II (as applicable) consistent with the provisions of an iterative MS4 program required pursuant to this general permit constitutes compliance with the standard of reducing pollutants to the "maximum extent practicable," provides adequate progress in meeting water quality standards, and satisfies the appropriate water quality requirements of the State Water Control Law and its attendant regulations.

The MS4 program plan shall include, at a minimum, the following written items:

a. The roles and responsibilities of each of the permittee's divisions and departments in the implementation of the requirements of the permit tasked with ensuring that the permit requirements are met;

b. If the permittee utilizes another entity to implement portions of the MS4 program, a copy of the written agreement. The description of each party's roles and responsibilities, including any written agreements with third parties, shall be updated as necessary;

c. For each MCM in Part I E, the following information shall be included:

1. Each specific requirement as listed in Part I E for each MCM;
2. A description of the BMPs or strategies that the permittee anticipates will be implemented to demonstrate compliance with the permit conditions in Part I E;
3. All standard operating procedures or policies necessary to implement the BMPs;
4. The measurable goal by which each BMP or strategy will be evaluated; and
5. The persons, positions, or departments responsible for implementing each BMP or strategy; and

d. A list of documents incorporated by reference including the version and date of the document being incorporated.

This MS4 Program Plan (plan) documents how Fauquier County will meet the requirements of 9VAC25-890-40 Virginia Pollutant Discharge Elimination System (VPDES) General Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4s). The County was originally issued an MS4 permit effective July 1, 2013 (Permit No. VAR040123) through June 30th 2018. The

current five-year permit term is November 01, 2018 through October 31, 2023. Mandated by Congress under the Clean Water Act and implemented in Virginia by the Department of Environmental Quality (DEQ), the MS4 permit is designed to protect water quality from urban stormwater pollution. Stormwater runoff from urban areas may contain sediments, fertilizers, pesticides, bacteria, motor oil, and other pollutants generated by various land uses and human activities. When left uncontrolled, this pollution can result in the impairment or destruction of aquatic habitats, a loss in aesthetic value, and threats to public safety and health. To achieve these water quality goals, the MS4 permit requires the County to control the discharge of pollutants to the maximum extent practicable by addressing the following six minimum control measures (MCMs):

MCM1: Public Education and Outreach
MCM2: Public Involvement and Participation
MCM3: Illicit Discharge Detection and Elimination
MCM4: Construction Site Stormwater Runoff Control
MCM5: Post-Construction Stormwater Management For New Development And Development On Prior Developed Lands
MCM6: Pollution Prevention And Good Housekeeping For Facilities Owned Or Operated By The Permittee Within The MS4 Service Area

In addition to the 6 MCMs, the County is required to develop an action plan to address pollutants entering the Chesapeake Bay allocated to the County. This Total Maximum Daily Load (TMDL) Action Plan identifies the maximum amount of a pollutant that can enter a water body without violating water quality standards.

The County is constantly reviewing and assessing the existing stormwater operations, ordinances, protocols and programming against the MS4 Permit requirements. These reviews and assessments lead to the identification of the most appropriate and cost effective best management practices (BMPs) to control pollution to the maximum extent practicable.

Fauquier County's MS4 Program

Fauquier County's MS4 Program is conducted by a number of different County Departments and Agencies and is also implemented in close cooperation with the Town of Warrenton. As required by the Code of Virginia, the "Responsible Official" for the County's program is the County Administrator. Administration of the program has been delegated by the County Administrator to the Department of Community Development. The Department of Community Development is responsible for coordinating the program and ensuring implementation across the various County entities which include Fauquier County Public Schools as well as the Departments of General Services and Parks & Recreation.

The MS4 Program also collaborates with the Department of Environmental Services and the John Marshall Soil and Water Conservation District on programs that benefit water quality in the County.

Fauquier County's Chesapeake Bay Total Maximum Daily Load Plan

Fauquier County is required to have a Chesapeake Bay TMDL Plan to address pollutant reductions for nitrogen, phosphorous and suspended solids. The plan calculates the baseline and target loads by a formula included within the MS4 permit, and identifies the means and methods by which the target loads reductions will be met. The County must then implement stormwater management practices sufficient to meet the target load reductions of 40% by the end of the current permit cycle October 31, 2023).

Minimum Control Measures

The following sections describe the Best Management Practices (BMPs) that the County will utilize to meet each of the six MCMs. Each MCM includes a description of the specific BMPs that will be implemented along with the following:

- The objective and expected results of each BMP in meeting the measurable goals of the MCM;
- The implementation schedule for the proposed BMP;
- The parties responsible for the BMP; and
- The method that will be utilized to document and determine the effectiveness of the BMP implementation, including policies, ordinances, schedules, inspection forms and written procedures.

A table at the end of each section summarizes the schedule for implementing the MCMs.

MCM1: Public Education and Outreach

From the County's MS4 Permit:

1. Public education and outreach.
f. The MS4 program plan shall include:
(1) A list of the high-priority stormwater issues the permittee will communicate to the public as part of the public education and outreach program;
(2) The rationale for selection of each high-priority stormwater issue and an explanation of how each education or outreach strategy is intended to have a positive impact on stormwater discharges;
(3) Identification of the public audience to receive each high-priority stormwater message;
(4) The strategies from Table 1 of Part I E 1 d to be used to communicate each high-priority stormwater message; and
(5) The anticipated time periods the messages will be communicated or made available to the public.

(1) High Priority Stormwater Issues to Communicate to the Public

1. Chesapeake Bay Pollutants (Nitrogen, Phosphorous, and Suspended Solids)
2. Homeowner Strategies for Urban Stormwater Management
3. Value and Importance of Stream Buffers

(2) Rationale for High Priority Stormwater Issues

The United States Environmental Protection Agency (EPA) developed the Chesapeake Bay TMDL in December 2010 to address nutrient and sediment contributions from the agricultural, wastewater and urban stormwater sectors. Excess nutrients cause algae blooms which create deadspots from dying algae consuming the oxygen in the water making it uninhabitable for aquatic life. Sediment deposited in stream beds can smother aquatic life and further harm fish. In response, Virginia has adopted a Watershed Implementation Plan (WIP) that identifies specific strategies for reducing these pollutants. The MS4 Permit requires the County to meet specific nutrient and sediment reductions. This will be achieved largely through the implementation of green infrastructure on County properties and strong enforcement of stormwater management and erosion and sediment control regulations.

Additionally, public education can also have a significant impact on helping to reduce the proliferation of pollutants within stormwater runoff. Identifying specific strategies for homeowners to better manage their urban stormwater can educate them on better and less impactful ways that they can maintain their property.

The final identified issue is that of the value and importance of stream buffer. With the County's predominantly rural character, a strategy that can be effectively implemented in this majority of the County was important to incorporate. This issue is being tackled in conjunction with the John Marshall Soil and Water Conservation District as well as other partners such as Friends of the Rappahannock and the Piedmont Environmental Council.

(3) Identification of the Public Audience

The audience to be targeted regarding Chesapeake Bay pollutants consists primarily of Fauquier County school children. The County's TMDL reduction goals are specific to County properties including two schools and a parks and recreation facility, both of whom have a primary or significant user group consisting of children.

The second audience consists of Fauquier County homeowners – primarily those within the Emerald Oaks and Brookside subdivisions whose properties drain to Auburn Middle School. The audience is not intended to be limited to just those subdivisions, however, as the homeowners strategies will improve water quality wherever they are employed.

The third audience is again focused primarily on schoolchildren with a recognition that all County residents benefit from additional knowledge of the benefits of stream buffers.

(4) Strategies to Communicate High Priority Issues

The Fauquier Department of Community Development, the Town of Warrenton and Friends of the Rappahannock are working with teachers from the Fauquier County Public Schools to integrate Meaningful Watershed Educational Experiences (MWEEs) into the curriculum through all grade levels at Fauquier County Public Schools. The goal of this collaboration is for the Friends of the Rappahannock to initially aid in the demonstration of MWEE projects which would then be emulated by teachers and become part of the curriculum within the school system. Additionally, annual events such as the stormwater awareness poster contests for elementary school students that are conducted by the Town of Warrenton through their Warrenton Waterways Cleanup Initiative and publicized by Fauquier County will continue to be supported. In addition to the activities described above, the County also utilizes signage in the form of drain medallions as well as creative messaging through the programs such as the "Write As Rain" campaign to raise awareness of water quality around stormdrains.

Fauquier County homeowners are reached primarily through information available on the County's website, including the MS4 Program page, the Fauquier County Departments of Community Development and Environmental Services webpages, as well as mode traditional media such as the Rappahannock Rapidan Regional Commission's updated *Homeowner's Guide to a Watershed Friendly Backyard*. These homeowners are also reached through interactive participation in events such as the Vint Hill Fall Festival (when appropriate from a social gathering perspective) which attracts a number of residents from the adjoining Brookside subdivision, as well as online means such as webinars in partnership with other local organizations such as the Piedmont Environmental Council.

Finally, the schoolchildren are also reached through the integration of interactive workshops with the John Marshall Soil and Water Conservation District. These are not limited to riparian buffer plantings but also include educational outdoor training leaning about the impacts of water on the local ecosystem.

(5) Anticipated Time Periods

There are no formal time periods identified for any of the communication methods identified above. The integration of MWEEs into Fauquier County Schools curriculum along with the interactive workshops are ongoing and are hoped will occur into perpetuity. Other outreach methods such as poster competitions, participation in festivals and other gatherings, temporary signage such as the "Write as Rain" creative messaging, will occur as opportunities present themselves during the course of the year. Other

communications methods are always ongoing, such as information availability as well as the medallion markers on stormdrains.

MCM2: Public Involvement and Participation

From the County's MS4 Permit:

2. Public involvement and participation.
e. The MS4 program plan shall include:
(1) The webpage address where mechanisms for the public to report (i) potential illicit discharges, improper disposal, or spills to the MS4, (ii) complaints regarding land disturbing activities, or (iii) other potential stormwater pollution concerns;
(2) The webpage address that contains the methods for how the public can provide input on the permittee's MS4 program; and
(3) A description of the public involvement activities to be implemented by the permittee, the anticipated time period the activities will occur, and a metric for each activity to determine if the activity is beneficial to water quality. An example of metrics may include the weight of trash collected from a stream cleanup, the number of participants in a hazardous waste collection event, etc.

(1) Reporting webpage

The Fauquier County Department of Community Development has a webpage dedicated to Complaints and Enforcement: http://www.fauquiercounty.gov/government/departments-a-g/community-development/complaints-enforcement

(2) MS4 Input Webpage

The Fauquier County Department of Community Development has a webpage dedicated to the MS4 Program which includes contact information for the coordinating department as well as the specific contact information for the representatives of the Departments of General Services and Parks and Recreation as well as Fauquier County Public Schools. A link to the Town of Warrenton's MS4 webpage is also available on the site: http://www.fauquiercounty.gov/government/departments-a-g/community-development/planning/long-range-planning/ms4-permit-program

(3) Public Involvement Activities

Educational Events: In the initial phases of the implementation of the MWEEs into Fauquier County curriculum, presentations during the school year by the Friends of the Rappahannock along with educational trainings with the John Marshall Soil and Water Conservation District will represent the involvement activities for the school children. Attendance numbers for these events will be tracked.

Disposal or Collection Events: The Fauquier County Department of Environmental Services will continue to offer disposal of household hazardous waste from County residents.

Pollution Prevention: The "Write as Rain" campaign and stormdrain medallions will be utilized to mark locations within the Urbanized area to raise awareness of stormwater runoff and its ultimate destination of the Chesapeake Bay.

MCM3: Illicit Discharge Detection and Elimination

From the County's MS4 Permit:

3. Illicit discharge detection and elimination.
d. The MS4 program plan shall include:
(1) The MS4 map and information table required by Part I E 3 a. The map and information table may be incorporated into the MS4 program plan by reference. The map shall be made available to the department within 14 days upon request;
(2) Copies of written notifications of new physical interconnections given by the permittee to other MS4s; and
(3) The IDD procedures described in Part I E 3 c.

(1) The MS4 Map and Information Table

These items may be found on the MS4 Program Webpage:
http://www.fauquiercounty.gov/government/departments-a-g/community-development/planning/long-range-planning/ms4-permit-program

(2) New Physical Interconnections

There are no new physical interconnections. The County has existing interconnections with the Town of Warrenton and the Virginia Department of Transportation.

(3) Illicit Discharge and Detection Procedures

Please see Appendix A for the Fauquier County Illicit Discharge and Detection Plan.

MCM4: Construction Site Stormwater Runoff Control

From the County's MS4 Permit:

4. Construction site stormwater runoff control.
c. The MS4 program plan shall include:
(1) If the permittee implements a construction site stormwater runoff control program in accordance with Part I E 4 a (1), the local ordinance citations for the VESCP program;
(2) If the permittee implements a construction site stormwater runoff control program in accordance with Part I E 4 a (3):
(a) The most recently approved standards and specifications or if incorporated by reference, the location where the standards and specifications can be viewed; and
(b) A copy of the most recent standards and specifications approval letter from the department;
(3) A description of the legal authorities utilized to ensure compliance with Part I E 4 a to control construction site stormwater runoff control such as ordinances, permits, orders, specific contract language, policies and other interjurisdictional agreements;
(4) Written inspection procedures to ensure the erosion and sediment controls are properly implemented and all associated documents utilized during inspection including the inspection schedule;
(5) Written procedures for requiring compliance through corrective action or enforcement action to the extent allowable under federal, state, or local law, regulation, ordinance, or other legal mechanisms; and
(6) The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the construction site stormwater runoff control requirements in Part I E 4.

(1) Local Ordinance Citation

These items may be found in Chapter 11 of the County Code entitled "*Stormwater Management and Erosion and Sediment Control*:
https://library.municode.com/va/fauquier_county/codes/code_of_ordinances?nodeId=COOR_CH11STMAERSECO

(3) Description of Legal Authorities

These items may be found in Chapter 11 of the County Code entitled "*Stormwater Management and Erosion and Sediment Control*:
https://library.municode.com/va/fauquier_county/codes/code_of_ordinances?nodeId=COOR_CH11STMAERSECO

(4) Written Inspection Procedures

Implementation:

- Land Disturbing Projects with an E&S Plan are tracked by Land Disturbing Permit Number.
- Pre-construction meeting required with the exception of SFHs agreement in lieu of.
- Initial E&S inspection required on all Land Disturbance Permits.
- "A" schedule contains projects that require inspections a minimum of once every two weeks.
- "B" schedule contains projects that require monthly inspections.

- "C" schedule contains projects that are complete and stabilized; it shall be monitored quarterly for the required one year establishment period to ensure survival of vegetative cover throughout the four seasons.
- "D" schedule contains projects that are stabilized but where construction has not been completed be inspected quarterly. Once construction resumes, the project will be moved back to the A schedule.
- Hard hats and safety vest should always be worn on active construction sites.

Pre-construction Meeting:

1. Pre-construction meeting is required prior to installation of E&S controls.
2. The owner, applicant, contractor, operator, and other agencies are required at the preconstruction meeting.
3. The pre-construction meeting is to discuss specific items such as construction sequencing, critical areas or potential updates or changes to the E&S plan.
4. Pre-construction notes should clarify what has to be installed at the initial inspection to receive signoff before proceeding with construction.
5. This will include a discussion of what is required in the Pollution Prevention Plan (PPP), and to make sure all updates are included. The location of the PPP, and approved plans onsite will be determined at this time. An exception to this would be if you have a private consultant who is familiar with the process otherwise this should be discussed at the pre-construction meeting with the person who will be responsible for the inspections.
6. Record of pre-construction meeting will be forwarded to all appropriate personnel.
7. The project site should be monitored during E&S controls installation to ensure compliance. This will require more frequent inspections.
8. Clarify that the only disturbance should be for E&S controls only.
9. Do not assume – ask questions!
10. This meeting sets the tone for the project!

Initial E&S inspection:

1. The inspector will conduct an initial E&S inspection once all E&S control measures are in place as shown on phase 1 E&S plans. The inspector will walk the perimeter of the site, review all controls to make sure they are functioning as intended and discuss concerns or issues with the site superintendent.
2. It is ok to say they cannot proceed if controls are not correct. You do not want a site under construction without appropriate controls in place.
3. Evaluation of the PPP will be conducted.
4. All items are to be documented in an inspection report of the inspection and review of the PPP onsite.
5. Authorization for clearing and grading will occur once they pass the initial E&S inspection as determined by the inspector.
6. The initial inspection will be signed off on the Land Disturbing Permit (LDP) by the inspector once all the erosion control devices have been installed, prior to commencing rough grading.
7. New projects are placed on the "A" schedule.
8. Construction General Permit Coverage letter & land disturbance permit should be posted.

A schedule inspections:

1. During each site visit the inspector will walk the perimeter of the site as well as interior controls and visually inspect it for compliance along with the approved E&S Plan and Pollution Prevention Plan (PPP).
2. The inspector will discuss all violations with the operator noted in the file.
3. A written inspection report with photographic evidence documenting violations will be sent to the owner, operator, RLD and others as requested by the owner. All inspections and documents are logged into Energov.
    a. If violations are noted on the inspection report, the owner or operator are required to address the violations within 5-10 working days as determined by the inspector. Can email report if the items are minor infractions, but if they are major issues that should be addressed in a timely manner, call the contact person.
    b. If violations have a direct impact on waterways or adjacent properties the owner or operator are given 1-3 working days depending on the severity of the violation. Call the contact person and discuss the items that need to be addressed.
4. Anytime you meet with the contractor onsite, you should walked the site with them to identify deficiencies to ensure a clear understanding of what is required.
5. Projects remain on the A schedule until such time as the inspector determines any of the following:
    a. Construction of the project is 80% complete and vegetative stabilization measures are in place. These projects may be moved to the B schedule where inspections will be performed monthly. OR
    b. The project consists of less than five acres of disturbance, does not cross any perennial streams, does not impact a neighboring waterway and has strong perimeter controls in place. OR
    c. The project is not completely constructed but is stabilized and construction is not underway. If a project on the B schedule remains inactive for 14 days and active construction is not anticipated to commence within 6 months, the project will be moved to the D schedule for quarterly inspections. When active construction resumes, the project will be moved back to the A or B schedule and follow standard protocol.

B Schedule Inspections:

1. A written inspection report with photographic evidence documenting violations will be sent to the owner, operator, RLD and other as requested by the owner.
2. Regular maintenance of controls need to be addressed while on the B schedule. Continue to inspect the perimeter and interior controls. The inspector may return the project to the A schedule at any time erosion and sediment controls need more frequent attention.
3. Once the site is 90% stabilized with permanent vegetation or no evidence of other issues, written authorization is required from the inspector to convert sediment basins or to install SWM facilities.
4. Inspections will occur during conversion and installation of SWM facilities to ensure compliance with the SWM plan. Installation will be documented with photographic evidence. Issues or concerns will be documented and sent to the owner, operator, RLD and engineer in the form of an inspection report.

5. As-built of SWM facilities will be required to be submitted within the year of conversion or installation. The reviewing engineer will follow-up in the field and confirm functionality of SWM facilities and document noted deficiencies.
6. Once the SWM facility has been installed, and there is no evidence of erosion or areas of concerns. The project will then is moved to the "C" schedule and continue to be inspected quarterly for a year to ensure survival of vegetative cover throughout the four seasons.

C Schedule Inspections:

1. An inspection report will be documented and sent to the owner and operator. The file will not be released until the site is 90% stabilized with permanent vegetation, and there are no noted deficiencies.
2. Bond Reduction for line item permanent seeding is not released until the Bond is completely released.

D Schedule Inspections:

1. An inspection report will be documented and sent to the owner and operator during the quarterly inspections until active construction.
2. When active construction resumes, the project will be moved back to the A or B schedule and follow standard protocol.

Bond Release:

Once full bond release is requested, the bond administrator will conduct a final inspection to inspect for functionality of SWM facilities, and permanent stabilization of the project site.

(5) Written procedures for Compliance

These items may be found in Chapter 11 of the County Code entitled "*Stormwater Management and Erosion and Sediment Control*:
https://library.municode.com/va/fauquier_county/codes/code_of_ordinances?nodeId=COOR_CH11STMAERSECO

(6) Roles and Responsibilities

The County's Erosion and Sediment Control Program is administered by the Fauquier County Department of Community Development's Environmental Program Division.

MCM5: Post-Construction Stormwater Management for New Development and Development on Prior Developed Lands

From the County's MS4 Permit:

5. Post-construction stormwater management for new development and development on prior developed lands.
h. The MS4 program plan shall include:
(1) If the permittee implements a VSMP in accordance with Part I E 5 a (1) and (2):
(a) A copy of the VSMP approval letter issued by the department;
(b) Written inspection procedures and all associated documents utilized in the inspection of privately owned stormwater management facilities; and
(c) Written procedures for compliance and enforcement of inspection and maintenance requirements for privately owned BMPs.
(2) If the permittee implements a post-development stormwater runoff control program in accordance with Part I E 5 a (3):
(a) The most recently approved standards and specifications or if incorporated by reference, the location where the standards and specifications can be viewed; and
(b) A copy of the most recent standards and specifications approval letter from the department.
(3) A description of the legal authorities utilized to ensure compliance with Part I E 5 a for post-construction stormwater runoff control such as ordinances (provide citation as appropriate), permits, orders, specific contract language, and interjurisdictional agreements;
(4) Written inspection procedures and all associated documents utilized during inspection of stormwater management facilities owned or operated by the permittee;
(5) The roles and responsibilities of each of the permittee's departments, divisions, or subdivisions in implementing the post-construction stormwater runoff control program; and
(6) The stormwater management facility spreadsheet or database incorporated by reference and the location or webpage address where the spreadsheet or database can be reviewed.

(1) (a) VSMP Approval Letter

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

March 27, 2015

Paul McCulla, County Administrator
Fauquier County
10 Hotel Street Suite 204
Warrenton, Virginia 20186

Dear Mr. McCulla:

In accordance with §62.1-44.15:27 G of the Virginia Stormwater Management Act (Act), the Department of Environmental Quality (DEQ) has completed the review of Fauquier County's final Virginia Stormwater Management Program (VSMP) application package submitted on September 19, 2014. Based on this review, DEQ has determined that Fauquier County's VSMP is consistent with the Act, the VSMP regulation and the General VPDES Permit for Discharges of Stormwater from Construction Activities.

In light of this determination, DEQ approves Fauquier County's VSMP and the County is authorized to operate a VSMP as of July 1, 2014. Please note that this approval is based on the content of the application package. Any changes made to the documents in the package after the approval date, including changes to the adopted ordinance, may necessitate DEQ evaluation as part of its compliance review of your approved VSMP.

Thank you for your cooperation in developing a VSMP. We look forward to continuing to assist the County with the implementation of its VSMP.

Sincerely,

David K. Paylor

cc: Melanie Davenport, Director, Water Division
Frederick Cunningham, Director, Office of Water Permits
Joan Salvati, Manager, Local Government Stormwater Programs

(b) Written Inspection Procedures

These can be found on the County's website at:
https://www.fauquiercounty.gov/government/departments-a-g/community-development/applications-center-forms/swm-maintenance-inspections-submission

(c) Written Procedures for Compliance and Enforcement

Stormwater Regulations 9VAC25-870-112 requires long-term maintenance of permanent stormwater management facilities.

1. Thirty (30) days prior to the required inspection date the County shall send the current owner of the property a letter informing them that an inspection is due by a specific date.
2. If the owner submits a third party inspection report, the VSMP Administrator or their designee shall review the report.
    a. If the inspection report is correct, it shall be filed and the information entered into the inspection database.
    b. If the inspection report is deficient or incorrect, the County must notify the owner and the certifying engineer of the deficiencies and/or corrections. The owner has thirty (30) days to correct the errors or address the deficiencies.
    c. If maintenance is required, the owner shall be notified of the required maintenance and given a specific time to perform the maintenance as determined by the VSMP Administrator.
    d. Once the required maintenance has been performed by the owner, a maintenance report shall be provided to the County.
    e. If the maintenance is not performed within the specified timeline issued by the VSMP Administrator, the VSMP Administrator may proceed with citing the property owner with a violation. A Notice to Comply is issued with a $250.00 fee with a (30) days deadline.
    f. Copies of the NTC shall be sent to the County Attorney and the Assistant Chief of Zoning and Development Services.
    g. Extensions may be granted to the deadline(s) specified in the NTC at the discretion of the Program Administrator.
        i. All extensions must be approved by the Program Administrator.
        ii. Extensions must be requested in writing.
        iii. Extensions include a $250 fee for each extension beyond the deadline(s) specified in the NTC.
    h. Program Administrator shall follow-up with the County Attorney about the NTC and proceeding to Circuit Court with enforcement via a fine, injunction or other legal proceeding if the issues cited in the NTC is not addressed.
    i. Notices of appeal shall be filed with the Program Administrator within (30) days of the date of the decision appealed.

(3) Description of Legal Authorities

These items may be found in Chapter 11 of the County Code entitled "*Stormwater Management and Erosion and Sediment Control*:
https://library.municode.com/va/fauquier_county/codes/code_of_ordinances?nodeId=COOR_CH11STMAERSECO

(4) Written Inspection Procedures

These can be found on the County's website at:
https://www.fauquiercounty.gov/government/departments-a-g/community-development/applications-center-forms/swm-maintenance-inspections-submission

(5) Roles and Responsibilities

The County's Stormwater Management Program is administered by the Fauquier County Department of Community Development's Environmental Program Division.

(6) Stormwater Management Facility Database

MCM6: Pollution Prevention and Good Housekeeping

From the County's MS4 Permit:

6. Pollution prevention and good housekeeping for facilities owned or operated by the permittee within the MS4 service area.
p. The MS4 program plan shall include:
(1) The written procedures for the operations and maintenance activities as required by Part I E 6 a;
(2) A list of all high-priority facilities owned or operated by the permittee required in accordance with Part I E 6 c, and whether or not the facility has a high potential to discharge;
(3) A list of lands for which turf and landscape nutrient management plans are required in accordance with Part I E 6 I and j, including the following information:
(a) The total acreage on which nutrients are applied;
(b) The date of the most recently approved nutrient management plan for the property; and
(c) The location in which the individual turf and landscape nutrient management plan is located;
(4) A summary of mechanisms the permittee uses to ensure contractors working on behalf of the permittees implement the necessary good housekeeping and pollution prevention procedures, and stormwater pollution plans as appropriate; and;
(5) The written training plan as required in Part I E 6 m.

(1) Written Procedures for Operations and Maintenance

These procedures can be found on the County website at:
https://www.fauquiercounty.gov/government/departments-a-g/community-development/land-development/stormwater-and-erosion-sediment-control/floating-maintenance-schedule-templates-by-s

(2) High Priority Facilities

The County has identified the County's Fleet Maintenance Facility as a high-priority facility and has developed a Storm Water Pollution Prevention Program (SWPP) to address any potential pollution from this site. It is not considered to have a high potential to discharge.

(3) Nutrient Management Plans

Location	Plan Start	Plan End	Prepared By	Cert. Code	Total SF Managed	Total SF Affected
Auburn MS	3/9/2019	3/8/2022	R.B. Benyo	668	359,455	540,500
Cedar Lee MS	12/21/2017	12/20/2020	R.B. Benyo	668	57,600	144,000
CM Bradley ES	6/1/2017	12/31/2020	R.B. Benyo	668	127,206	415,625
Fauquier HS	6/1/2017	12/31/2020	R.B. Benyo	668	89,723	293,100
Old Town Warrenton	6/4/2018	6/3/2021	T. Ohlwiler	761	3,119	3,119
PB Smith ES	11/13/2017	12/31/2020	R.B. Benyo	668	98,713	214,200
Taylor MS	11/13/2017	12/31/2020	R.B. Benyo	668	67,363	130,000
Warrenton MS	6/1/2017	12/31/2020	R.B. Benyo	668	86,974	204,000

Vint Hill Park	3/9/2019	3/8/2022	R.B. Benyo	668	395,700	720,000

Copies of the plans are available through the County's MS4 Coordinator.

(4) Mechanisms for Contractor Compliance

The County facilities are maintained by County staff who follow the training identified below. The lone exclusion is the application of fertilizers which are performed by the preparers of the nutrient management plans.

(5) Written Training Plan

(1) Fauquier County and Fauquier County Public Schools field personnel shall receive training in the recognition and reporting of illicit discharges no less than once per 24 months.
(2) Should the County become responsible for road, street and parking lot maintenance, field personnel performing those duties shall receive training on pollution prevention and good housekeeping no less than once per 24 months.
(3) Employees working in and around maintenance, public works, or recreational facilities shall receive training on pollution prevention and good housekeeping no less than once per 24 months.
(4) Employees and contractors who apply pesticides and herbicides shall be trained and/or certified in accordance with the Virginia Pesticide Control Act.
(5) Employees serving as plan reviewers, inspectors, program administrators and construction site operators shall obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law and its attendant regulations.
(6) Employees implementing the stormwater program shall obtain the appropriate certifications as required under the Virginia Stormwater Management Act and its attendant regulations.
(7) Employees whose duties include emergency response shall have been trained in spill response.

Appendix A: Illicit Discharge and Detection Plan

Fauquier County MS4 Illicit Discharge and Detection Plan

Introduction

The primary purpose of the United States Clean Water Act is to maintain and restore the environmental integrity of the nation's waters. Pollution can enter our waters either through "non-point sources" (spread out in a multitude of incremental inputs across the landscape), or through "point sources" (discrete and focused inputs, such as a pipe's discharge). A component of the Clean Water Act is the National Pollution Discharge Elimination System (NPDES). NPDES permits regulate point source discharges. Stormwater within urbanized areas are known to contain pollutants and when that stormwater system is discharged into natural waters, it is considered as a "point source" and therefore a NPDES permit is required. Stormwater "general construction" permits are NPDES permits issued to oversee the management of stormwater during new construction and land disturbing projects. The form of NPDES permit that oversees on-going management of stormwater systems within highly urbanized locations is the "MS4 permit." MS4 stands for "Municipal Separate Storm Sewer System." The regulations state that land managers within the urbanized areas of Fauquier County, mainly Warrenton and New Baltimore, need to obtain an MS4 permit and manage their stormwater system consistent with the MS4 permit requirements. Since Fauquier County drains into the Chesapeake Bay, our MS4 permit requirements are closely tied to the restoration requirements and goals of the Chesapeake Bay Act. Fauquier County now has an MS4 permit that allows us to discharge pollutants into Virginia waters; however, along with this permission are rigorous standards and requirements that are subject to both state and federal laws.

A philosophical difference between a MS4 permit and construction stormwater permits, or many other "typical" permits, is that unlike most others, a MS4 permit is long-term and operations-oriented. A construction stormwater permit, an erosion and sediment control permit, a building permit, etc. are for a discrete project and it is issued for a limited time period. Conversely, a MS4 permit deals with our on-going operations, so as a consequence, a MS4 permit is much more broad-based, and the permit will be continually be re-issued in perpetuity- not as a separate task or after-thought, but ingrained into our everyday way that we conduct our business.

There are three main categories of plans required under our MS4 permit: the MS4 Stormwater Management Plan, the TMDL (Total Maximum Daily Load) Plan, and the Illicit Discharge and Elimination Plan.

The TMDL Plan component requires us to utilize established and approved "Best Management Practices (BMPs) in a manner that reduces the amount of nitrogen, phosphorus and total suspended sediment (three of the primary pollutants within the Chesapeake Bay) to pre-defined limits or caps specific to our watersheds. There are multitude ways that we may reduce these pollutants, ranging from constructing stormwater retention ponds or bio-retention filters (BMPs), through regulation of homeowners or businesses that discharge stormwater into our stormwater drainage systems, or through providing tax

incentives for homeowners to retrofit the stormwater systems on their private property. However it is accomplished, we as the permit holder, are the one ultimately responsible for results.

While the MS4 TMDL Management Plan is focused upon the reduction of the three pollutants regulated under the Chesapeake Bay Act, the Stormwater Management Plan pertains to the reduction of all pollutants. The Stormwater Management Plan is focused upon improving our day-to-day practices in a manner that reduces the amount of pollutants that Fauquier County discharges as a normal function of our operations. The fundamental directive of the permit is for us to reduce the discharge of pollutants to the "maximum extent practical."

The MS4 Stormwater Plan has six main components:

1) *Public Education and Outreach*;

2) *Public Involvement and Participation;*

3) *Construction Site Stormwater Runoff Control*;

4) *Post-construction Stormwater Management in New Development and Development on Prior Developed Lands*;

5) *Pollution Prevention/Good Housekeeping for County Operations*; and

6) *Illicit Discharge Detection and Elimination*- Fauquier County's MS4 Permit requires the County to monitor the stormwater outfalls within our MS4-regualted area; with a specific focus on discovering and understanding any flows into our stormwater system that is not normal stormwater flow. The basic premise is that a properly designed and maintained urban stormwater system should only contain stormwater during and a short-time period following precipitation events that creates surface-water runoff. Therefore, after an extended dry period, our stormwater drainage system should be dry. If there is active flow in our stormwater system, then it may be the result of infiltrating groundwater, leaking septic systems, poor housekeeping practices, improper plumbing connections, illegal discharges into our stormwater system, or some other discharge or use that our stormwater systems was not designed for, and one in which may not be authorized under our MS4 Permit. Any unauthorized and unpermitted use of our stormwater system is an "illicit discharge." Therefore, our MS4 permit requires us to understand and characterize the pollutants within our discharges, conduct investigations to determine the source of these pollutants, and demonstrate actions to reduce these pollutants. Affirmative actions in this category therefore include water quality monitoring and analysis, the development of management and enforcement processes, and the development and implementation of ordinances and other legal means to codify and adopt these processes into our operations and enforceable actions. These processes, procedures, and methodologies form the basis for the County's Illicit Discharge Detection and Elimination Plan.

A Description of Fauquier County's MS4 Stormwater System(s)

This document contains Fauquier County's strategy to detect and eliminate illicit discharges to the MS4 conveyance system in accordance to the provisions in its MS4 permit. Preferably, a stormwater conveyance should only carry storm water for short durations during and immediately after a storm event. After extended periods without precipitation, these stormwater conveyances should be dry. If there are fluids in stormwater systems after extended periods without precipitation, these fluids are probably not stormwater. Any fluids in stormwater conveyances that is not stormwater is an illicit discharge. Fauquier County's MS4 Permit requires us to develop a program that finds, monitors, mitigate, reduce and eliminate illicit discharges into stormwater conveyances under Fauquier County's jurisdiction and within the areas covered by the MS4 permit. This document serves as that plan.

The majority of the area that drains into the County's MS4 stormwater conveyances comes from County owned and operated land; therefore, the County has greater knowledge of potential pollutant sources of this stormwater, and the County has greater flexibility and degree of control over making positive improvements in water quality.

There are a total of 11 Fauquier County owned and managed sites within the designated MS4 area that contain stormwater conveyances, and therefore subject to the requirements of the MS4 Permit. These sites are: as follows:

Site	**Managing Department**	**Regulated Stormwater System**	**Interconnections**
Vint Hill- Village Green	Fauquier County Parks and Recreation Department	Yes	1. Virginia Department of Transportation
Auburn Middle School	Fauquier County School Department	Yes	1. Virginia Department of Transportation
P.B. Smith Elementary School	Fauquier County School Department	Yes	1. Virginia Department of Transportation
C.M. Bradley Elementary School	Fauquier County School Department	Yes	1. Town of Warrenton
Fauquier High School	Fauquier County School Department	Yes	1. Town of Warrenton
Fauquier County and Public Health Department offices	Fauquier County General Services	Yes	
Fauquier County Maintenance Shop	Fauquier County General Services	Yes	1. Town of Warrenton
Taylor Middle School	Fauquier County School Department	Yes	
Warrenton Community Center	Fauquier County Parks and Recreation Department	Yes	
Brumfield Elementary School	Fauquier County School Department	Yes	1. Town of Warrenton
Warrenton Middle School	Fauquier County School Department	Yes	1. Town of Warrenton
Total		**11 sites**	

Outfall Discharges

Discharge Flow Types

Dry weather discharges are likely composed of one or more possible flow types:

- *Sewage and septage* flows are produced from sewer pipes and septic systems.
- *Washwater* flows are generated from a wide variety of activities and operations. Examples include discharges of gray and laundry water from homes, schools and businesses; commercial or county cash wash facilities; floor drains; to sub-pump disposals.
- *Tap water* flows are derived from leaks and losses that occur during the distribution of drinking water in the water supply system.
- *Automobile flows* are leaks such as oil, grease, and antifreeze fluids that leak from the vehicle.
- Surface water runoff flows are derived from sheet flow and that wash surface chemicals and debris into stormwater systems.
- *Landscape irrigation* flows occur when excess irrigation water ends up in the storm drain system.
- *Groundwater* flows occur when the local water table rises above the bottom elevation of the storm drain and enters the stormwater system either through cracks and joints, or when open channels or pipes associated with the MS4 may intercept seeps and springs.
- *Illegal dumps*
- General chemical storage
- Custodial/cleaning supplies
- Gas/diesel-powered equipment
- Parking lot drainage
- Ground disturbance
- Leaking vehicle fluids
- Fertilizers
- Winter de-icing
- Fuel storage
- Paint/solvent storage
- Pool draining

Each of these potential discharge "types" may not be as equally probable or likely within each of Fauquier County sites within its permitted MS4 area. Based upon the specific field conditions for each of these sites, the probable source of outfall dry weather discharges is as follows:

	Auburn MS	Fauquier HS	FC Offices	Mtnce. Shop	Taylor MS	Brumfield ES
Illegal Dumps	X	X	X	X	X	X
Chemical Storage	X	X		X	X	X
Custodial Supplies	X	X	X	X	X	X
Gas/Diesel Equipment	X	X	X	X	X	X
Parking Lot Drainage	X	X	X	X	X	X
Leaking Vehicle Fluids	X	X	X	X	X	X
Fertilizers Use	X	X	X	X	X	

Winter De-icing	X	X	X	X	X	X
Fuel storage	X	X		X	X	X
Sewer	X	X	X	X	X	X
Groundwater Infiltration		X	X	X	X	X
Paint/Solvent Storage		X		X	X	X
Classroom Chemical Use		X				
Fertilizer Storage		X				
Agricultural Supplies		X				
Sand/Bark Storage		X		X		

Table 2

Managing Discharge

One of the key components of an effective Dry Weather Screening monitoring program is having an accurate baseline for site-specific outfalls, and the water quality characterization of likely Water Types that each monitored outfall may receive. Table 1 contains data of anticipated "fingerprint" water quality conditions of different Water Discharge Types within Alabama.

The idea behind "fingerprint" data is that different sources of outfall discharges have discernable chemical signatures. For instance, knowing that the average radiator flushing has conductivity values of 3,280 µS/cm and that the conductivity of your outfall is 142 µS/cm, would lead you to conclude that radiator flushing may not be the most likely source of this discharge. Perhaps you would be better served to investigate potential tap water, groundwater or irrigation water as the most likely source.

The type of information presented in Table 3 is valuable as a starting point, but the more effective and useful baseline data would be localized and site-specific relevance. As data from Fauquier County's MS4 outfall monitoring program matures, the ability to develop and refine site specific fingerprint and baseline data will increase. As this information increases, Fauquier County will have the ability to populate Table 4 with site-specific "finger-prints."

Comparable "Fingerprint" (Mean Values) of Flow Types					
Flow Type	Hardness (mg/L as CaCO3)	NH3 (mg/L)	Potassium (mg/L)	Conductivity (µS/cm)	Detergents (mg/L)
Sewage	50	25	12	1,215	9.7
Septage	57	87	19	502	3.3
Laundry Washwater	45	3.2	6.5	463.5	758
Car Washwater	71	0.9	3.6	274	140
Plating Bath (Liquid Industrial Waste)	1,430	66	1,009	10,352	6.8
Radiator Flushing	5.6	26	2,801	3,280	15
Tap Water	52	<0.06	1.3	140	0
Groundwater	38	0.06	3.1	149	0

Landscape Irrigation	53	1.3	5.6	180	0
All values are from Tuscaloosa, AL monitoring except liquid wastes and septage, which are from Birmingham, Al. Sources: Pitt (project support material) and Pitt et al. (1993).					

The idea behind these “finger-print” tables is to aid in discovering the source of illicit discharges into Fauquier County’s stormwater system. For instance, if a small amount of groundwater infiltration normally discharges from one particular outfall and that groundwater has a fairly consistent Condcutivity reading centered at 150 µS/cm; however, on one particular day the reading is over 600 µS/cm, the County would likely want to investigate to see if there is another type of discharge entering this outfall than what has normally occurred. Such deviations from normal cannot be recognized if the County does not know what “normal” readings are for each particular outfall.

Table 2: Draft Water Sourcing Key for Fauquier County

Source->	**Sewage**	**Laundry**	**Cleaning Supplies**	**Industrial**	**Fertilizer**	**Parking Lots**	**Potable Water**	**Groundwater**	**Other Signs**
Parameter									
Temperature									
pH									
Conductivity									
ORP									
TDS									
Resistivity									
Free Chlorine									
Hardness									
DO									
Detergents									
Nitrate/Nitrite									Lower DO, increased algae growth
Phosphorus/Orthophosphate									Lower DO, increased algae growth

Table 4

Water Quality Parameters

There are countless water quality parameters that could be chosen for a water quality monitoring program; however, not all are equally valid, appropriate, or relevant to stormwater management. Based on the potential contaminant sources located in the watersheds listed above, some of the more common or potentially relevant parameters include the following:

Alkalinity

Alkalinity measures a solution's capacity to react with and neutralize acids. In most natural waters, alkalinity is determined by the presence or absence of the various carbonate species.

Ammonia

Ammonia is one of the forms of nitrogen. Sewer and septic systems, industrial operations, fertilizers, animal feedlots, landfill leachates, and airborne pollutants (especially from auto emissions) are important sources of ammonia in surface waters.

Chloride

Chlorine is an element that is often not found in high concentrations within natural fresh water systems. If there are high quantities of chlorine in solution within any outfall discharges, it is most likely due to illicit discharges of industrial or household chemicals or from chlorinated municipal or community drinking water source. Three common categories of chlorine testing are "Total Chlorine," "Combined Chlorine," and "Free Chlorine." Chlorine has the ability to act as a disinfectant to treat and neutralize microorganisms. When chlorine interacts with microorganisms, some of the chlorine will be "used up" while killing these microorganisms. Combined Chlorine is a term used to represent the quantity of chlorine "used up" in this process. The remaining chlorine available for additional disinfection work is referred to as "Free Chlorine." Total Chlorine is the term used to represent the sum of Combined and Free Chlorine.

Color

Many chemicals when dissolved in water will give the water a distinctive color. For the purpose of outfall monitoring, a simple qualitative description of any perceived color will suffice.

Conductivity

Conductivity is used as an indicator of dissolved solids, Higher values indicates a higher concentration of dissolved inorganic solids, such as Chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium, iron, or aluminum. Since groundwater is usually in contact with natural minerals and geologic strata for longer durations of time than typical surface waters, groundwater usually contains higher concentrations of dissolved chemicals and therefore higher conductivity values than the equivalent surface waters. Municipal and community water treatment of water for human consumption usually removes some of these dissolved minerals

from solution, so therefore, potable water usually contains lower conductivity values than typical natural waters.

Detergents

Detergents are organic compounds used in laundry products. There are two types of detergents: phosphate and surfactant. Within surface waters, phosphate detergents are highly caustic, while surfactant detergents are highly toxic. Surfactants break up water tension and used to enhance the wetting, foaming, dispersing and emulsifying properties of detergents. Phosphates are placed in detergents to soften hard water and help suspend dirt.

Discharge

Discharge is an important hydrological parameter and a critical value to determine chemical transport, but it is less important as a means to differentiate the source of illicit discharge. However, groundwater infiltration will rarely ever account for high volumes of discharge in any of Fauquier County's outfalls. A general qualitative description will suffice.

Dissolved Oxygen (DO)

DO is as the name implies oxygen that has dissolved in the water. The two primary sources of dissolved oxygen in surface waters is the respiration of aquatic organisms and the incorporation of atmospheric oxygen into the water. The absorption of atmospheric oxygen into surface waters is greatly facilitated by stirring and agitating the water. Therefore, highly turbulent and high-gradient streams generally have higher concentrations of dissolved oxygen than slow-moving and placid lakes and streams. The presence of organic nutrients in water can greatly reduce the concentrations of dissolved oxygen. Therefore, low dissolved oxygen may indicate that the water is stressed as a result of high level of nutrient pollutants. Low dissolved oxygen generally makes the water unsuitable for aquatic life, and since aquatic life is essential for many natural chemical processes, the lack of sufficient dissolved oxygen can therefore lead to further water pollution complications and ramifications. This water quality parameter is one of the types of water quality problems within Fauquier County streams as identified by Virginia's list of Impaired Waters.

E Coli (also called Escherichia coli)

E. coli is a type of fecal coliform bacteria that is commonly found in the intestines of warm-blooded animals. There are a wide variety of biologic contaminants that can be found in surface waters that originated from the intestines of warm-blooded animals, so therefore, the presence of E. coli is used as an indicator of the wide variety of other biologic contaminants that may also be present in the water sample. This water quality parameter is the most common type of problem within Fauquier County streams as identified by Virginia's list of Impaired Waters.

Fecal Coliforms

Fecal coliforms are a group of bacteria that is commonly found in the intestines of warm-blooded animals. As a result, it was widely used as an indicator of the wide variety of harmful biologic contaminants that may be found in surface waters. However, its use as a water

quality parameter has largely been replaced by E. coli, one particular form of fecal coliform. This water quality parameter is one of the types of water quality problems within Fauquier County streams as identified by Virginia's list of Impaired Waters. This water quality parameter is one of the types of water quality problems within Fauquier County streams as identified by Virginia's list of Impaired Waters.

Floatables

The observance of floatables should be a factor in any outfall inspection. Sewer, oil sheen, and suds are common floatables. Other than leaves, sticks and other obvious natural objects, floatables in outfalls is often an indicator of unnatural impacts waters. It should be noted that natural microbes in wetlands can produce an oil-like sheen on the water's surface.

Hardness

Water hardness is a measure of relative quantity of calcium, magnesium, and other metals in solution. The hardness of water may be classified as follows:

	mg/L
Soft	<17.1
Slightly Hard	17.1-60
Moderately Hard	60 – 120
Hard	120-180
Very Hard	>180

Langelier Saturation Index (LSI)

LSI is a value used to indicate the degree of saturation of a solution with respect to calcium carbonate. If LSI is negative, the solution will still dissolve calcium carbonate. If LSI is zero, the solution is fully saturated. If LSI is positive, then calcium carbonate will likely precipitate out of solution. The LSA is not a widely-used used water quality parameter. It was included in this list due to its ease to generate from other commonly-used parameters.

Nitrate/Nitrite

Nitrate generally exists in natural surface waters in trace amounts, however concentrations may be high in some groundwater. Conversely, nitrite and ammonium are less stable and thereby less common in natural waters. The primary source of nitrite and ammonium is from industrial, wastewater, agricultural and other anthropomorphic operations.

Nitrogen in all its forms is an important pollutant related to the Chesapeake Bay Act, and as such it, along with Total Suspended Sediment (TSS) and Phosphorus is regulated and many localities including Fauquier County has required reductions in these three pollutants.

Benthic-Macroinvertebrate Bioassessments

Benthic-Macroinvertebrate Bioassessments are becoming more popular as an index for water quality health. Many aquatic organisms are highly sensitive to water quality perturbations. As a result, even relatively small alterations in a streams chemistry may have a

recognizable affect upon aquatic invertebrate populations and communities. Benthic-Macroinvertebrate Bioassessments are simply standardized assessment of the diversity and health of aquatic invertebrates living on the stream's substrate. These assessments give an indicator of the general water quality condition, but does not specify what specific water pollution that this impact is derived from. To perform the wide array of chemical lab analysis looking at each potential pollutant would be cost-prohibitive and time consuming. Conversely, Benthic-Macroinvertebrate Bioassessment is rather inexpensive measure of the general health of the water system. This water quality parameter is the second-most common type of problem within Fauquier County streams as identified by Virginia's list of Impaired Waters.

Odor

Most natural waters do not contain a strong odor, so therefore, waters with an odor is usually an indication some unnatural impact or perturbation. A common qualitative scale used to measure the odor of waters is a three-point scale: a score of 1 means the odor is faint; a score of 2 means a moderate odor; and a score of 3 indicates strong (can smell it from a distance).

Oil and Grease

Oil and grease is an analysis for oil and grease. Since a major source of oil and grease is from vehicles, it may be a good indicator of pollutants derived from run-off from parking lots and roadways.

Total Organic Carbon

Total organic carbon (TOC) is a measurement of all carbon bound in organic compounds. These organic compounds may pose a risk to human health. Common sources of TOC include natural decaying organic material, detergents, pesticides, fertilizers, and industrial chemicals.

Oxygen Reduction Potential (ORP)

ORP is a measure of a solution's potential to 'acquire' electrons. The greater the ORP value, the higher ability of the solution to absorb pollutants without under deleterious water quality complication.

pH

pH is a measure of the relative concentration of dissolved hydrogen ion in solution. Neutral water has a pH of 7. Low pH (less than 7.0) indicates an acid solution, and high pH (more than 7.0 and up to 14.0) indicates a basic solution. Extreme values may indicate commercial or industrial flows.

Phosphate/Orthophosphate

Phosphate and Orthophosphate are two forms of ionized phosphorus. Although phosphorus is present in natural conditions, the most common source is from sewage, detergents, fertilizers, and laundry and cleaning products. Airborne sources derived from industrial operations can be a significant source in some locations. Common concentration <

0.05 mg/l. Phosphorus in all its forms is an important pollutant related to the Chesapeake Bay Act, and as such it, along with Total Suspended Sediment (TSS) and Nitrogen is regulated and many localities including Fauquier County has required reductions in these three pollutants.

Resistivity

Resistivity is the reciprocal of conductivity, so as a consequence, the measurement of resistivity or conductivity is an important parameter for water quality monitoring, but measuring both adds nothing to the program.

Sulfate/Sulfide

The presence of sulfate can be a dominant source of acidity in natural waters. A major source of sulfate in natural waters is from the atmosphere as a result of human's combustion of fossil fuels.

Surfactants

Surfactants is a type of detergent, so refer to the definition of detergents.

Temperature

Temperature can be an effective parameter to differentiate potential sources of illicit discharge. For instance, groundwater tends to stay at or near the locality's annual mean temperature, while surface waters tend to fluctuate throughout the day or season.

Total Dissolved Solids (TDS)

TDS is a measure of all material in an aqueous solution existing in dissolved or ionized form. This parameter is closely related to conductivity.

Total Suspended Solids (TSS)

While Total Dissolved Solids is the total amount of solid materials dissolved in solution, Total Suspended Solids (TSS) is the measurement of the total amount of solids in the water that has not dissolved. TSS particles are suspended in solution. TSS is an important pollutant related to the Chesapeake Bay Act, and as such it, along with Nitrogen and Phosphorus is regulated and many localities including Fauquier County has required reductions in these three pollutants. Turbidity is closely related to Total Suspended Solids (TSS), but there are many intrinsic complications in attempting to accurately derive one of these parameters from the other.

Turbidity

Turbidity is a measure of a solution's clarity due to the presence of small particles of solid matter suspended in the water. For instance, fine clays and silts may be light enough that gravity would not rapidly settle the material to the bottom, but sand and gravel would rapidly fall to the bottom. These suspended solids adds a cloudiness to the water. A common source of turbidity is erosion that has washed fine material off the land surface into nearby surface

waters. Many waters become more turbid after large rain storms. Turbidity is closely related to Total Suspended Solids (TSS), but there are many intrinsic complications in attempting to accurately derive one of these parameters from the other.

Fauquier County's Outfall Monitoring Program

Based upon the limited scope and complexity of the watersheds draining into Fauquier County's MS4 watersheds, a combination of visual observations and in-house field monitoring will be utilized to meet our MS4 Dry Weather Screening requirements and to effectively assess, monitor, and reduce the concentration of pollutants entering our waterways within Fauquier County. The specific parameter monitored will consist of the following:

Parameter	**Methodology Category**
Free Chlorine	Instrument
Color	Observation
Detergents, Sufactants	Kit
Discharge	Observation
Dissolved Oxygen	Kit
Floatables	Observation
Hardness	Instrument
Langelier Saturation Index (LSI)	Instrument
Nitrate/Nitrite	Kit
Odor	Observation
Oxygen Reduction Potential (ORP)	Instrument
pH	Instrument
Phosphate/Orthophosphate	Kit
Temperature	Instrument
Total Dissolved Solids (TSS)	Instrument

Table 5

At a minimum, the color, discharge, floatables, odor, pH, and temperature will be monitored with additional variables to be tested should any of the initial variables show results outside of normal conditions.

<u>Equipment</u>

Fauquier County obtained a Myron 6PIIFCE Waterproof Multi-parameter Meter. This meter has the capability of reading temperature, pH, Conductivity, ORP (Oxygen Reduction Potential), TDS (Total Dissolved Solids), Resistivity, free Chlorine, LSI, and Hardness. Hach kits was obtained to measure dissolved oxygen (Hach OX-2P), surfactant detergents (Hach DE-2), nitrate and nitrite (Hach NI-12), and phosphorus and orthophosphate (Hach PO-19A).

The use, calibration, and operations of the Myron meter and the Hach test kits will be as specific in the manufacturer's guidelines and specifications. Initially, the following calibration solutions were also acquired: Oakton pH buffer pouches, pH 4.01; Oakton pH buffer pouches, pH 7.0; Oakton pH buffer pouches, pH 10.0; Oakton conductivity calibration pouches, 447 µS; Oakton conductivity calibration

pouches, 1,413 µS; and Oakton conductivity calibration pouches, 2,764 µS. Continued use and calibration of this equipment will be as

An appropriate monitoring period for Dry Weather Screening begins after 72 hours without precipitation of less than 0.10 inches of rain in any 24-hour period.

An example, in 2012, there were a total of 44 days in 13 blocks, within the months of June, July, August and September, in which fit

Protocols

Timing

"Dry weather" outfall monitoring needs to occur during periods of extended dry weather. For Fauquier County's MS4 outfall monitoring purposes, this shall be defined as at least three days since any cumulative three-day rainfall total does not exceed 0.10 inches, ideally within the months of June, July, August, or September (for the official National Weather station located in the Dulles International Airport). As an example, in 2012, there were a total of 44 days in 13 blocks, within the months of June, July, August and September that would have fit this criteria. Within June 2015, there was only two days that fit this criteria.

It should be noted that since the Dulles International Airport weather station is located several miles from Fauquier County's MS4 outfalls, some degree of adaptation will be required. There may be localized rain storms that may add or reduce the number of actual dry weather periods. If the monitor(s) have a high degree of confidence that particular days would fit this criteria, or does not fit this criteria, then available monitoring days may be adjusted accordingly. However, if it is decided to conduct a dry weather monitoring even during periods in which the Dulles Airport station reads is not qualified, then the monitor must leave the official MS4 files a written note that documents the rationale for monitoring on that particular day.

Although not required to, for comparative purposes, the preference is to monitor all the required outfalls within reasonably close period of time as possible. The particular sequence or order does not matter; however, where monitoring outfalls that discharge into the same stream channel, then monitoring shall start at the most down-stream outfall and then progress to each progressive upstream outfall.

Calibration

For every applicable parameter, the Myron meter and each test kit, will be calibrated in the field at the minimum, immediately prior to the day's first monitoring use, and also in the field immediately after the day's last use. In addition, calibration will occur if the meter was noticeably disturbed, such as receiving a hard bump, dropped, or if the sensors was allowed to dry out. If there is any doubt, choose to recalibrate.

Qualifications

Fauquier County's MS4 Coordinator will provide designated personnel with an orientation to water quality sampling, MS4 Dry Weather Screening requirements, and specifics about Fauquier County's MS4

outfalls. Only persons approved by the MS4 Coordinator shall perform outfall inspections and water quality sampling. For consistency purposes, it would be preferred if the same person(s) perform the inspections each time. The only water sampling equipment that will be used is equipment specifically approved for Fauquier County's MS4 inspections, as designated by the MS4 Coordinator.

Investigations

If the inspections find an illicit discharge, the inspector will notify the MS4 Coordinator as soon as practical after return from that particular day's field inspections. The MS4 Coordinator will then decide if further inspections and water quality sampling will be required. If further sampling is deemed appropriate and this sampling would require sending water samples to a lab for analysis beyond the County's capabilities, then the MS4 Coordinator will send the sample to only an EPA-certified lab.

MS4 Outfall Dry Weather Screening- Field Sheet (Water Quality Sampling Form)

Site Name:_____ **Outfall ID:**_____

Date:_____ **Time:**_____ **Inspector(s) Name:**_____

Weather, Today:_____ **Weather, Previous:**_____

Sample From:	
Outfall	
Stream- Up	
Stream- Down	

Observation Parameter	
Discharge	
Odor	
Color	
Floatables	

Myron Parameter	**Reading**
Free Chlorine	
Hardness	
LSI	
ORP	
pH	
TSS	
Temperature (C)	

Kit Parameter	**Value**
Dissolved Oxygen	
Nitrate/Nitrite	
Phosphate/Orthophosphate	
Detergents, Surfactants	

Notes: